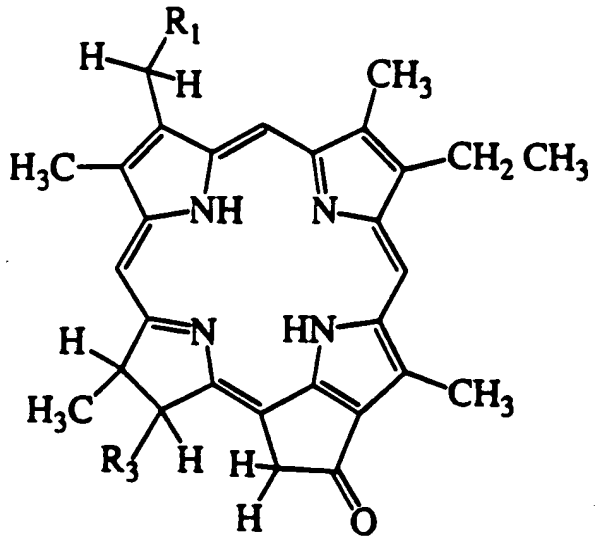
CLAIMS

1. A compound of formula I:



I

wherein R_1 is CH_2OR_2 where R_2 is a primary or secondary alkyl containing 1 to 20 carbons; and R_3 is $-CO_2R_4$ where R_4 is H or an alkyl containing 1 to 20 carbons.

2. The compound as claimed in claim 1, wherein R_1 is CH_2—O—hexyl.

3. The compound as claimed in claim 1, wherein R_2 is $-CH_3$.

4. The compound as claimed in claim 1, wherein R_3 is $-CO_2CH_3$.

5. A method to effect the destruction of target virus, cells or tissue, comprising:

contacting said target with an effective amount of compound of claim 1; and irradiating with light absorbed by said compound.

6. A pharmaceutical composition useful in treatment of a target virus, cells or tissue, comprising:

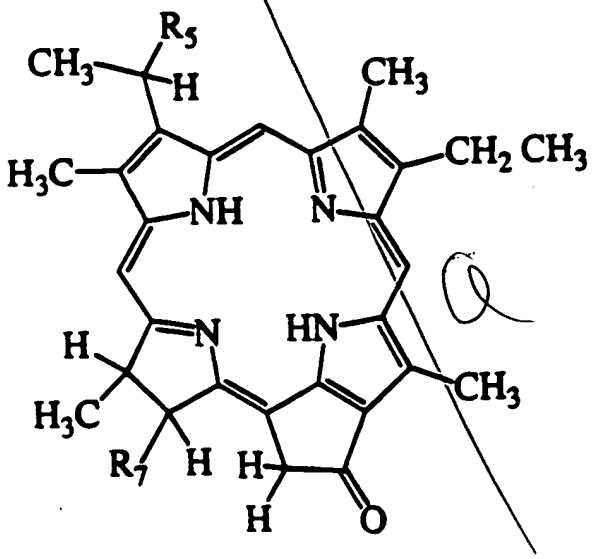
an effective amount of the compound of claim 1 in admixture with a pharmaceutically acceptable excipient.

7. A conjugate which consists essentially of the compound of claim 1 covalently bound to a target-specific component.

8. The conjugate of claim 7 wherein the component is an immunoglobulin or a receptor liquid.

9. A pharmaceutical composition useful for labeling malignant tissue which comprises the compound of claim 1 associated with a label.

10. A compound of formula II:



II

wherein R_5 is $-OR_6$ where R_6 is a primary or secondary alkyl containing 1 to 20 carbons and R_7 is $-CO_2R_8$ where R_8 is H or an alkyl containing 1 to 20 carbons.

11. The compound as claimed in claim 10, wherein R_5 is -O-hexyl.

12. The compound as claimed in claim 10, wherein R_7 is $-CO_2CH_3$.

13. The compound as claimed in claim 10, wherein R_5 is $-O-(CH_2)_5CH_3$ and R_7 is selected from the group consisting of $-CO_2CH_3$ and $-CO_2H$.

14. A method to effect the destruction of target virus, cells or tissue, comprising:

contacting said target with an effective amount of compound of claim 10; and irradiating with light absorbed by said compound.

15. A pharmaceutical composition useful in treatment of a target virus, cells or tissue, comprising:

an effective amount of the compound of claim 10 in admixture with a pharmaceutically acceptable excipient.

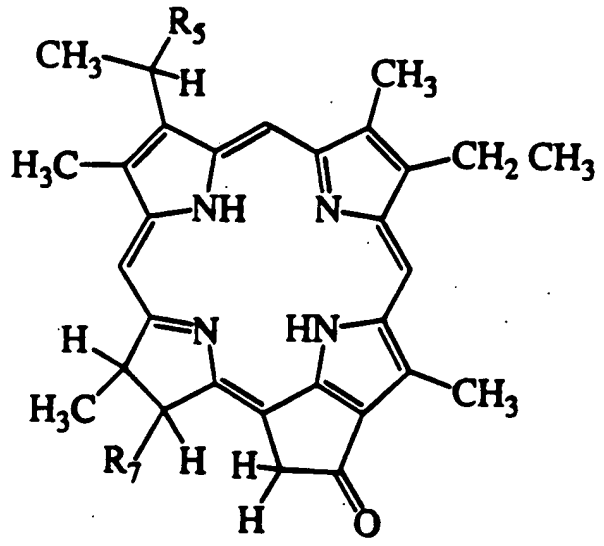
16. A conjugate which consists essentially of the compound of claim 10 covalently bound to a target-specific component.

17. The conjugate of claim 16 wherein the component is an immunoglobulin or a receptor liquid.

18. A pharmaceutical composition useful for labeling malignant tissue which comprises the compound of claim 10 associated with a label.

19. A method of treating a human with abnormal cells which replicate at an abnormally high rate, comprising the steps of:

administering to the human a therapeutically effective amount of a compound of formula II



II

wherein R_5 is OR_6 where R_6 is a primary or secondary alkyl containing 5 to 20 carbons and R_7 is $-CO_2R_8$ where R_8 is H or $-CH_3$;

allowing the compound of formula I to accumulate on the abnormal cells; and

irradiating the compound of formula I with a wavelength of light which is absorbed by the compound of formula I and thereby generating a cytotoxic effect with respect to the abnormal cells.

20. The method as claimed in claim 19 wherein the compound is administered in an amount in the range of 0.01 mg/kg to 1.0 mg/kg of body weight.

21. The method as claimed in claim 20 wherein the compound of formula II is administered at timed intervals in the range of from every 3 hours to every 72 hours for over a period of from 1 day to 30 days.

22. The method as claimed in claim 21, wherein R_5 is -O-hexyl and R_7 is $-CO_2H$.

23. The method as claimed in claim 22 wherein the wavelength of the light is in the range of 600 to 700 nm.

24. The method as claimed in claim 23 wherein the wavelength of the light is about 660 nm.

PYROPHEOPHORBIDES AND THEIR
USE IN PHOTODYNAMIC THERAPY

Pyropheophorbide compounds are injected into a host and accumulate in tumor tissue to a higher degree than surrounding normal tissues. When the pyropheophorbide compounds are exposed to a particular wavelength of light the compounds become cytotoxic and destroy the tumor or diseased tissue without causing irreversible normal tissue damage. The pyropheophorbide compounds have shown improved results as compared to drugs currently used in photodynamic therapy. Further, they absorb light further in the red, optimizing tissue penetration and are retained in the skin for short time periods relative to other drugs used in photodynamic therapy.